

Chapter Seven: Mitigation Measures and Lessee Advisories

Contents

Chapter Seven: Mitigation Measures and Lessee Advisories.....	7-1
MITIGATION MEASURES	7-3
General Measures.....	7-3
Facilities and Structures	7-3
Gravel Mining and Use.....	7-4
Prehistoric, Historic, and Archeological Sites.....	7-5
Training	7-5
Local Hire	7-5
Subsistence Harvest Protection	7-6
Title 16 Streams	7-8
Waste Disposal	7-8
Specific Measures	7-9
LESSEE ADVISORIES.....	7-11

Chapter Seven: Mitigation Measures and Lessee Advisories

AS 38.05.035(e) and the departmental delegation of authority provide the director, Division of Oil and Gas (DO&G), with the authority to impose conditions or limitations, in addition to those imposed by statute, to ensure that a resource disposal is in the state's best interests. Consequently, to mitigate the potential adverse social and environmental effects of specific selected lease-related activities, DO&G has developed mitigation measures and will condition post-sale plans of operation, exploration, or development, and other permits based on these mitigation measures.

Under AS 38.05.035(e), ADNOR has authority to apply the following mitigation measures for the proposed Beaufort Sea Areawide Oil and Gas Lease Sale, to all oil and gas activities performed to access the state's leased mineral interest, regardless of the ownership status of the land from which the lessee seeks access.

Lessees must obtain approval of a detailed plan of operations from the director before conducting exploratory or development activities (11 AAC 83.158). An approved plan of operations is the authorization by which DO&G regulates exploration, development and production activities.

A plan of operations must identify the specific measures, design criteria, and construction methods and standards to be employed to comply with the restrictions listed below. It must also address any potential geohazards that may exist at the site. Plans of operation must comply with coastal zone consistency review standards and procedures established under 6 AAC 50 and 80 including coastal district plans. Applications for required state or federal agency authorizations or permits must be submitted with the plan of operations. DO&G will require, as a condition of consistency approval, such modification or terms as may be necessary to ensure consistency with the ACMP standards.

The measures presented in this preliminary best interest finding were developed after considering measures imposed in other North Slope oil and gas lease sales; fish and wildlife resource and harvest data submitted by ADF&G; and environmental data relating to air and water quality, solid and liquid waste disposal, and oil spills submitted by ADEC. Measures were also developed or modified after considering comments submitted by the public, industry, federal and state agencies, and local government. Additional project-specific mitigation measures may be imposed if and when oil and gas lessees submit plans of exploration, operation, or development.

In addition to compliance with these mitigation measures, lessees must comply with all applicable local, state and federal codes, statutes and regulations, and any subsequent amendments. Federal, state and local government powers to regulate the oil and gas industry are discussed in the "Governmental Powers to Regulate Oil and Gas Exploration, Development, Production, and Transportation" in Chapter One of this finding. Additionally, some applicable federal and state statutes and regulations are presented in Appendix B.

Information to lessees relevant to the sale is also presented under Lessee Advisories. This section contains important information to lessees and operators regarding the sale area. It also includes precautions, which may apply to post-lease sale activities, and reflect existing local, state, and federal law or policy at the time of the sale.

The following abbreviations are used in these mitigation measures: Alaska Coastal Management Program (ACMP), Alaska Department of Environmental Conservation (ADEC), Alaska Department of Fish and Game (ADF&G), Alaska Department of Natural Resources (ADNR), Alaska Eskimo Whaling Commission (AEWC), Division of Land (DL), Division of Governmental Coordination (DGC), Division of Mining and Water Management (DMWM), Director of the Division of Oil and Gas (Director), Division of Parks and Outdoor Recreation (DPOR), National Pollutant Discharge Elimination System (NPDES), North

Slope Borough (NSB), North Slope Borough Municipal Code (NSBMC), North Slope Borough Coastal Management Plan (NSBCMP), State Historic Preservation Officer (SHPO), Spill Prevention Control and Countermeasure (SPCC), and the U.S. Fish and Wildlife Service (USF&WS).

Except as indicated, the restrictions listed below do not apply to geophysical exploration on state lands; geophysical exploration activities are governed by 11 AAC 96. See Lessee Advisory 4.

The following mitigation measures and lessee advisories for the sale will apply to oil and gas activities in, on or accessing all leased lands and waterbodies as a condition of issuing the lease, regardless of the ownership status of the land.

MITIGATION MEASURES

General Measures

1. a. Explosives must not be detonated within, beneath, or in close proximity to fishbearing waters if the detonation of the explosive produces a pressure rise in the waterbody greater than 2.5 pounds per square inch (psi) unless the waterbody, including its substrate, is solidly frozen.

Explosives must not produce a peak particle velocity greater than 0.5 inches per second (ips) in a spawning bed during the early stages of egg incubation. The minimum acceptable offset from fishbearing streams and lakes for various size buried charges is:

1 pound charge	37 feet
2 pound charge	52 feet
5 pound charge	82 feet
10 pound charge	116 feet
25 pound charge	184 feet
100 pound charge	368 feet

Specific information on the location of fishbearing waterbodies may be obtained by contacting ADF&G.

- b. The lessee will consult with the NSB prior to proposing the use of explosives for seismic surveys. The director may approve the use of explosives for seismic surveys after consultation with the NSB.
2. Except for approved off-road travel, exploration activities must be supported only by ice roads, winter trails, existing road systems or air service. Wintertime off-road travel across tundra and wetlands may be approved in areas where snow and frost depths are sufficient to protect the ground surface. Summertime off-road travel across tundra and wetlands may be authorized subject to time periods and vehicle types approved by DL. Exceptions may be granted by the director of the DL, and the Director, if an emergency condition exists or if it is determined, after consulting ADF&G, that travel can be accomplished without damaging vegetation or the ground surface.
3.
 - a. Removal of water from fishbearing rivers, streams, and natural lakes shall be subject to prior written approval by DMWM and ADF&G.
 - b. Removal of snow cover from fishbearing rivers, streams, and natural lakes shall be subject to prior written approval by ADF&G. Compaction of snow cover overlying fishbearing waterbodies will be prohibited except for approved crossings. If ice thickness is not sufficient to facilitate a crossing, ice and/or snow bridges may be required.
4. Water intake pipes used to remove water from fishbearing waterbodies must be surrounded by a screened enclosure to prevent fish entrainment and impingement. Screen mesh size shall not exceed 0.04 inches unless another size has been approved by ADF&G. The maximum water velocity at the surface of the screen enclosure may be no greater than 0.1 foot per second.

Facilities and Structures

5. Lessees must minimize the impact of industrial development on key wetlands. Key wetlands are those wetlands that are important to fish, waterfowl, and shorebirds because of their high value or scarcity in the region. Lessees must identify on a map or aerial photograph the largest surface area, including reasonably foreseeable future expansion areas, within which a facility is to be sited or an activity is to occur. The map or photograph must accompany the plan of operations. DO&G will consult with ADF&G to identify the

least sensitive areas within the area of interest. To minimize impacts, the lessee must avoid siting facilities in the identified sensitive habitat areas, unless no feasible and prudent alternative exists.

6. Exploration facilities, with the exception of artificial gravel islands, must be temporary and must be constructed of ice unless the Director determines that no feasible and prudent alternative exists. Re-use of abandoned gravel structures may be permitted on a case-by-case basis by the Director, after consultation with the director, DL, and ADF&G. Approval for use of abandoned structures will depend on the extent and method of restoration needed to return these structures to a usable condition.
7.
 - a. Pipelines must be located so as to facilitate the containment and cleanup of spilled hydrocarbons. Where feasible and prudent, onshore pipelines must be located on the upslope side of roadways and construction pads unless the director, DL, determines that an alternative site is environmentally acceptable. Wherever possible, onshore pipelines must utilize existing transportation corridors and be buried where soil and geophysical conditions permit.
 - b. All pipelines, including flow and gathering lines, must be designed and constructed to provide adequate protection from water currents, storm and ice scouring, subfreezing conditions, and other hazards as determined on a case-by-case basis.
8.
 - a. Offshore oil and gas transportation pipelines will be encouraged if the Director determines that the laying of such pipelines is technically feasible and environmentally preferable to transport by oil tanker or other means.
 - b. Following the installation of a pipeline of sufficient capacity, no crude oil will be transported by surface vessel from offshore production sites, except in an emergency. The Director will evaluate the emergency and determine an appropriate response to the condition.
9. Onshore pipelines shall be designed and constructed to avoid significant alteration of caribou and other large ungulate movement and migration patterns. At a minimum, above ground pipelines shall be elevated five feet, as measured from the ground to the bottom of the pipe, except where the pipeline intersects a road, pad, or a ramp installed to facilitate wildlife passage. ADNRC may, after consultation with ADF&G, require additional measures to mitigate impacts to wildlife movement and migration.

Gravel Mining and Use

10. Gravel mining sites required for exploration and development activities will be restricted to the minimum necessary to develop the field efficiently and with minimal environmental damage. Where feasible and prudent, gravel sites must be designed and constructed to function as water reservoirs for future use. Gravel mine sites required for exploration activities must not be located within an active floodplain of a watercourse unless the director, DL, after consultation with ADF&G, determines that there is no feasible and prudent alternative, or that a floodplain site would enhance fish and wildlife habitat after mining operations are completed and the site is closed.

Mine site development and rehabilitation within floodplains must follow the procedures outlined in McLean, R. F. 1993, *North Slope Gravel Pit Performance Guidelines*, ADF&G Habitat and Restoration Division Technical Report 93-9.

11.
 - a. The state of Alaska discourages the use of continuous-fill causeways. Environmentally preferred alternatives for field development include use of buried pipelines, onshore directional drilling, or elevated structures. Approved causeways must be designed, sited, and constructed to prevent significant changes to nearshore oceanographic circulation patterns and water quality characteristics (e.g., salinity, temperature, suspended sediments) that result in exceedances of water quality criteria, and must maintain free passage of marine and anadromous fish.

- b. Causeways and docks shall not be located in river mouths or deltas. Artificial gravel islands and bottom founded structures shall not be located in river mouths or active stream channels on river deltas, except as provided for in (c).
- c. Each proposed structure will be reviewed on a case-by-case basis. Causeways, docks, artificial gravel islands and bottom founded structures may be permitted if the Director, in consultation with ADF&G, ADEC and the NSB, determines that a causeway or other structures are necessary for field development and that no feasible and prudent alternatives exist. A monitoring program may be required to address the objectives of water quality and free passage of fish, and mitigation shall be required where significant deviation from objectives occurs.

Prehistoric, Historic, and Archeological Sites

12. Prior to any ground disturbing activity resulting from exploration, development or production activities, the lessee must conduct an inventory of prehistoric, historic and archeological sites within the area affected by activity. The inventory must include consideration of literature provided by the NSB and local residents, documentation of oral history regarding historic and prehistoric uses of such sites, evidence of consultation with the Alaska Heritage Resources Survey and the National Register of Historic Places, and site surveys.

The inventory must also include a detailed analysis of the potential effects that might result from the activity. The inventory must be submitted to the Director for distribution to DPOR and the NSB for review and comment. In the event that an archeological, prehistoric or historical site or area may be adversely affected by an activity, the Director, after consulting DPOR, and the NSB, will direct the lessee as to what course of action will be necessary to avoid or minimize the adverse effect.

Discovery of prehistoric, historic, or archaeological objects: In the event any site, structure, or object of prehistoric, historic, or archaeological significance is discovered during leasehold operations, the lessee must immediately report such findings to the Director and the lessee must make every reasonable effort to preserve and protect such site, structure, or object from damage until the Director, after consulting the SHPO, has given directions as to its preservation.

Training

13. The lessee must include in any plan of exploration or plan of development a training program for all personnel, including contractors and subcontractors, involved in any activity. The program must be designed to inform each person working on the project of environmental, social, and cultural concerns that relate to the individual's job.

The program must employ effective methods to ensure that personnel understand and use techniques necessary to preserve geological, archeological and biological resources. In addition, the program must also be designed to help personnel increase their sensitivity and understanding of community values, customs, and lifestyles in areas where they will be operating. The program must include an explanation of the applicable laws protecting cultural and historic resources. The program shall address the importance of not disturbing archeological, cultural and historic resources and provide guidance on how to avoid disturbance.

Local Hire

14. To the extent they are available and qualified, the lessee is encouraged to employ local and Alaska residents and contractors for work performed on the leased area. Lessees shall submit, as part of the plan of operations, a proposal detailing the means by which the lessee will comply with the measure. The proposal must include a description of the operator's plans for partnering with local communities to recruit and hire local and Alaska residents and contractors. The lessee is encouraged, in formulating this

proposal, to coordinate with employment services offered by the state of Alaska and local communities and to recruit employees from local communities.

Subsistence Harvest Protection

15. a. Exploration, development or production operations shall be conducted in a manner that prevents unreasonable conflicts between lease related activities and subsistence activities. In enforcing this mitigation measure the division, during review of plans of operation, will work with other agencies and the public to assure that potential conflicts are identified and avoided to the fullest extent possible. Available options include alternative site selection, requiring directional drilling, seismic and threshold depth restrictions, subsea completion techniques, seasonal drilling restrictions, and the use of other technologies deemed appropriate by the Director.
 - b. Prior to submitting a plan of operations for both onshore and offshore activities that have the potential to disrupt subsistence activities, the lessee shall consult with the potentially affected subsistence communities, the AEWC and the NSB (collectively “parties”) to discuss potential conflicts with the siting, timing, and methods of proposed operations and safeguards or mitigating measures that could be implemented by the operator to prevent unreasonable conflicts. The parties shall also discuss the reasonably foreseeable effects on subsistence activities of any other operations in the area that they know will occur during the lessee’s proposed operations. Through this consultation, the lessee shall make reasonable efforts to assure that exploration, development, and production activities are compatible with subsistence hunting and fishing activities and will not result in unreasonable interference with subsistence harvests.
 - c. A discussion of resolutions reached or not reached during the consultation process and plans for continued consultation shall be included in the plan of operations. The lessee shall identify who participated in the consultation and send copies of the plan to participating communities and the NSB when it is submitted to the division.
 - d. If the parties cannot agree, then any of them may request the Commissioner of ADNR or his designee to assemble the parties. The commissioner may assemble the parties or take other measures to resolve conflicts among the parties.
 - e. The lessee shall notify the director of all concerns expressed by subsistence hunters during operations and of steps taken to address such concerns.
 - f. Lease-related use will be restricted when the Director determines it is necessary to prevent unreasonable conflicts with subsistence harvests.
16. Whale Harvest Protection:
- a. Permanent facility siting on Cross Island will be prohibited unless the lessee demonstrates to the satisfaction of the NSB, in consultation with the AEWC, that the development will not preclude reasonable access to whales as defined in NSBCMP Policy 2.4.3(d) and in NSBMC 19.79.050(d)(1) and as may be determined in a conflict avoidance agreement, if required by the NSB. With the approval of the NSB, the director may authorize permanent facilities.
 - b. Permanent facility siting in state waters within three miles of Cross Island will be prohibited unless the lessee demonstrates to the satisfaction of the director, in consultation with the NSB and the AEWC, that the development will not preclude reasonable access to whales as defined in NSBCMP Policy 2.4.3(d) and in NSBMC 19.79.050(d)(1) and as may be determined in a conflict avoidance agreement if required by the NSB.
 - c. Permanent facility siting in state waters between the west end of Arey Island and the east end of Barter Island (Tracts 40 through 45) will be prohibited unless the lessee demonstrates to the

satisfaction of the director, in consultation with the NSB and the AEW, that the development will not preclude reasonable access to whales as defined in NSB Policy 2.4.3(d) and in NSBMC 19.79.050(d)(1) and as may be determined in a conflict avoidance agreement if required by the NSB.

17. Any tract or portion thereof in the Beaufort Sea areawide sale area may be subject to the March 1990 Beaufort Sea Seasonal Drilling Policy in conjunction with the submission of a plan of operations permit application by the lessee. This measure will be reevaluated and updated periodically on the basis of experience and new information.
- a. **Exploratory Drilling From Bottom-founded Drilling Structures and Natural and Gravel Islands**
Subject to condition c below, exploratory drilling operations and other downhole operations from bottom-founded drilling structures and natural and gravel islands are allowed year-round in the Central Subsistence Whaling Zone (SWZ).¹ In the Eastern SWZ, drilling is prohibited upon commencement of the fall bowhead whale migration until whaling quotas have been met.
 - b. **Exploratory Drilling Operations from Floating Drilling Structures**
Subject to condition c, exploratory drilling below a predetermined threshold depth and other downhole operations from floating drilling structures is prohibited throughout the Beaufort Sea upon commencement of the fall bowhead whale migration until the whale migration mid-point.²

In addition to the above restriction, exploratory drilling above and below a predetermined threshold depth in the Eastern SWA from floating drilling structures is prohibited upon commencement of the fall bowhead whale migration until the whaling quotas have been met.

In the Central and Western SWZ, exploratory drilling above and below a predetermined threshold depth may be prohibited on a case-by-case basis until the whaling quotas have been met.³ The following criteria will be used to evaluate these operations: 1) proximity of drilling operations to active or whaling areas, 2) drilling operation type and feasible drilling alternatives, 3) number of drilling operations in the same area, 4) number of whaling crews in the area, and 5) the operator's plans to coordinate activities with the whaling crews in accordance with the subsistence harvest protection mitigation measure.

All non-essential activities associated with drilling are prohibited in the Central SWZ during the whale migration until whaling quotas have been met. Essential support activity associated with drilling structures occurring within active whaling areas shall be coordinated with local whaling crews in accordance with the subsistence harvest protection mitigation measure.

"Essential activities" include those necessary to maintain well control, maintain physical integrity of the drilling structure, and scheduled crew changes. Support craft include aircraft, boats, and barges. "Non-essential activity," by exclusion, are those activities that do not fit the definition of essential activities. Both types of activities must be described by the operators in their exploration plans submitted for state

¹ Subsistence Whaling Zones:

Eastern SWZ is that area within 20 nautical miles of the shoreline between 141° and 144° W longitude.

Central SWZ is that area within 20 nautical miles of the shoreline between 144° and 151° W longitude.

Western SWZ is that area within 20 nautical miles of the shoreline between 154° and 157° W longitude.

² Migration Dates:

Eastern SWZ - September 1 - October 10 with the midpoint of the migration on September 20.

Central SWZ and Western SWZ - September 10 - October 20 with the midpoint of the migration on September 28.

Outside SWZ - Seaward of the Eastern SWZ - September 1 - October 10 with the midpoint of the migration on September 20; Seaward and west of the Central SWZ - September 10 - October 20 with the midpoint of migration on September 28. The midpoint of the migration is when 50 percent of the whales have been deemed to have passed the drill site.

³ If upon review of the proposed operation using the above described criteria, the state determines that conflict with subsistence whaling activities may occur, additional drilling restrictions, similar to those imposed for the Eastern SWZ, may be imposed in the Central and Western SWZ's. In the Eastern SWZ, drilling is prohibited upon commencement of the fall bowhead migration until whaling quotas have been met.

review. To the extent feasible, mobilization or demobilization of the drilling structures should not occur during the whale migration. If operators propose to mobilize or demobilize during the whale migration, they must describe the activity in their exploration plan and must demonstrate why the activity must occur during the migration period.

- c. Exploratory Drilling in Broken Ice: Consistent with the May 15, 1984, “Tier 2” decision, lessees conducting drilling operations during periods of broken ice must:
 - (1) participate in an oil spill research program;
 - (2) be trained and qualified in accordance with Minerals Management Service standards pertaining to well-control equipment and techniques; and
 - (3) have an oil spill contingency plan approved by the state which meets the requirements of the “Tier 2” decision, including requirements for in situ igniters, fire resistant boom, relief well plans, and decision process for igniting an uncontrolled release of oil.

- 18. No restriction of public access to, or use of, the lease area will be permitted as a consequence of oil and gas activities except in the immediate vicinity of drill sites, buildings and other related facilities. Areas of restricted access must be identified and a rationale justifying the area restriction must be included in the plan of operations.

Title 16 Streams

- 19. Under Title 16 of the Alaska statutes, the measures listed below will be imposed by ADF&G below the ordinary high water mark in designated anadromous streams and fishbearing streams for activities that could block fish passage. Exceptions to these requirements, including exceptions for the use of spill containment and recovery equipment, may be allowed on a case-by-case basis. Specific information on the location of anadromous waterbodies in and near the area may be obtained from ADF&G.
 - a. Alteration of river banks, except for approved permanent crossings, will be prohibited.
 - b. Except for approved stream crossings, equipment must not be operated within willow stands (*Salix* spp.).
 - c. The operation of equipment, excluding boats, in open water areas of rivers and streams will be prohibited.
 - d. Bridges are the preferred watercourse crossings in fish spawning and important rearing habitats. In areas where culverts are used, they must be designed, installed, and maintained to provide efficient passage of fish.

Waste Disposal

- 20. Solid Waste Disposal:
 - a. Garbage and domestic combustible refuse must be incinerated. Nonburnables must be disposed of at an approved upland site.
 - b. The preferred method for disposal of muds and cuttings from oil and gas activities is by underground injection. Injection of non-hazardous oil field wastes generated during development is regulated by AOGCC through its Underground Injection Control (UIC) Program for oil and gas wells. Annular disposal of muds and cuttings associated with drilling an exploratory well is permitted by ADEC. Surface discharge of drilling muds and cuttings into lakes, streams, rivers, and high value wetlands is prohibited. Surface discharge of drilling muds and cuttings into reserve pits shall be allowed only when the Director, in consultation with ADEC, determines that alternative disposal methods are not

feasible and prudent. If use of a reserve pit is proposed, the operator must demonstrate the advantages of a reserve pit over other disposal methods, and describe methods to be employed to reduce the disposed volume. Onpad temporary cuttings storage will be allowed as necessary to facilitate annular injection and/or backhaul operations.

- c. Proper disposal of garbage and putrescible waste is essential to minimize attraction to wildlife. The lessee must use the most appropriate and efficient method to achieve this goal. The primary method of garbage and putrescible waste disposal is prompt, on-site incineration in compliance with state of Alaska air quality regulations in 18 AAC 50. The secondary method of disposal is on-site frozen storage in animal-proof containers with backhaul to an approved waste disposal facility. The tertiary method of disposal is on-site non-frozen storage in animal proof containers with backhaul to an approved waste disposal facility. Daily backhauling of non-frozen waste only must be achieved unless safety considerations prevent this.

21. Wastewater Disposal:

- a. Unless authorized by NPDES or state permit, disposal of wastewater into freshwater bodies, including Class III, IV, VI, and VIII wetlands, is prohibited.
- b. Surface discharge of reserve pit fluids will be prohibited unless authorized by ADEC permit and approved by DL.
- c. Disposal of produced waters in upland areas, including wetlands, will be by subsurface disposal techniques. ADEC may permit alternate disposal methods if the lessee demonstrates that subsurface disposal is not feasible or prudent.
- d. Discharge of produced waters into open or ice-covered marine waters of less than 33 feet in depth is prohibited. The commissioner, ADEC may approve discharges into waters greater than 33 feet in depth based on a case-by-case review of environmental factors and consistency with the conditions of a state certified development and production phase NPDES permit issued for the sale area.

Specific Measures

22. Birds:

- a. Permanent, staffed facilities must be sited to the extent feasible and prudent outside identified brant, white-fronted goose, snow goose, tundra swan, king eider, common eider, Steller's eider, spectacled eider, and yellow-billed loon nesting and brood rearing areas.
- b. Due to high concentrations of staging and molting brant and other waterbirds within the coastal habitats along the Teshekpuk Lake Special Area (TLSA) and other areas, operations that create high levels of disturbance, including but not limited to dredging, gravel washing, and boat and barge traffic along the coast, will be prohibited from June 20 to September 15 within one-half mile of coastal salt marshes, specifically Tracts 187, 209, 320, 483-485, 493, 494, 496, 497, 500-514, 517-519, 524, and 530. In addition, Tracts 228 and 231 are subject to the same restrictions between May 15 and July 30 to protect large concentrations of breeding snow geese. The construction and siting of facilities within one mile of these areas may be allowed on a case-by-case basis if the Director, DO&G and ADF&G determine that no other feasible and prudent location exists.

23. Bears:

- a. Exploration and production activities must not be conducted within one-half mile of occupied grizzly bear dens, unless alternative mitigation measures are approved by ADF&G. Known den sites shall be obtained from the Division of Wildlife Conservation, ADF&G, phone 459-7213, prior to commencement of any activities. Occupied dens encountered in the field must be reported to the above, and subsequently avoided by one-half mile.
- b. Operations must avoid known polar bear dens by one mile. Known den locations shall be obtained from the US Fish & Wildlife Service (907-786-3800) prior to starting operations. New dens

encountered in the field must be reported to the above, and subsequently avoided by one mile. If a polar bear should den within an existing development, off-site activities shall be restricted to minimize disturbance.

- c. For projects in close proximity to areas frequented by bears, lessees are encouraged to prepare and implement bear interaction plans to minimize conflicts between bears and humans. These plans could include measures to: (a) minimize attraction of bears to the drill sites; (b) organize layout of buildings and work areas to minimize human/bear interactions; (c) warn personnel of bears near or on drill sites and the proper procedures to take; (d) if authorized, deter bears from the drill site; (e) provide contingencies in the event bears do not leave the site or cannot be deterred by authorized personnel; (f) discuss proper storage and disposal of materials that may be toxic to bears; and (g) provide a systematic record of bears on the site and in the immediate area. The ADF&G has offered to assist lessees in developing educational programs and camp layout and management plans as lessees prepare their lease operations plans.

24. Waterbody Buffers:

To the extent feasible and prudent, onshore facilities other than docks, or road and pipeline crossings, will not be sited within 500 feet of fishbearing streams. Additionally, to the extent feasible and prudent, facilities will not be sited within one-half mile of the banks of the main channel of the Colville, Canning, Sagavanirktok, Kavik, Shaviovik, Kadleroshilik, Echooka, Ivishak, Kuparuk, Toolik, Anaktuvuk and Chandler Rivers. Facilities will not be sited within 500 feet of all other fishbearing waterbodies. Essential facility siting will be allowed in buffer areas in those instances where no other suitable sites are available. Facilities will not be sited within buffers unless the Director, after consulting ADF&G, determines that such facility restrictions are not feasible or prudent. Road and pipeline crossings must be aligned perpendicular or near perpendicular to watercourses.

25. Seals:

To protect hauled-out spotted seals, boat and barge traffic will be prohibited between July 15 and October 1 within one-half mile of the Piasuk River delta and Oarlock Island.

LESSEE ADVISORIES

1. Local Ordinances:

Lessees are advised that the NSB Assembly has adopted a comprehensive plan and land management regulations under Title 29 of the Alaska Statutes (AS 29.40.020-040). The NSB regulations require borough approval for all proposed uses, development and master plans. The NSBCMP policies are included as part of the NSB zoning regulations (19.70.060) and all NSB permit approvals will require the proposal to be substantially consistent with these policies. The NSB likely will aggressively assert its land management powers to the fullest extent permissible under law to address any outstanding concerns regarding impacts to the area's fish and wildlife species and to habitat and subsistence activities.

Restricting access to and use of fish camps defined in the Nuiqsut Traditional Land Use Inventory may violate NSBCMP and NSBMC subsistence harvest protection and land use regulations. Lessees are advised to consult with the NSB Planning Department and city of Nuiqsut during planning of operations that may take place onshore.

To comply with NSB Policy regarding the mining of beaches, barrier islands, or offshore shoals, in those circumstances where no feasible and prudent alternatives exist, substantial alteration of shoreline dynamics is prohibited.

2. Community Participation in Operations Planning:

Lessees are encouraged to bring one or more residents of communities in the area of operations into their planning process. Local communities have a unique understanding of their environment and community activities. Involving local community residents in the earliest stages of the planning process for oil and gas activities can be beneficial to the industry and to the community. Community representation on management teams developing plans of operation, oil spill contingency plans, and other permit applications can help communities understand permitting obligations and help industry to understand community values and expectations for oil and gas operations being conducted in and around their area.

3. Wetlands Identification:

The wetlands referred to in the facilities siting and solid waste disposal mitigating measures are based on a classification system developed by Bergman et al (USF&WS Resource Publication 129, 1977 *Waterbirds and Their Wetland Resources in Relation to Oil Development at Storkersen Point, Alaska*). Lessees are advised that the state may adopt or approve the use of an alternative wetlands classification system in the future, however, the protective nature of the wetlands mitigation measures developed for this and other oil and gas lease sales will remain consistent regardless of the wetlands classification ultimately selected.

4. Geophysical Activity:

Except as indicated, the mitigation measures listed above do not apply to geophysical exploration on state lands. Geophysical exploration activities are governed by 11 AAC 96. In conducting offshore geophysical surveys, neither the lessees nor their agents will use explosives in open water areas.

Lessees or nonlessee companies may propose various operations, which include seismic surveys, in the sale area. Lessees may not have control over those activities not contracted by them. However, post-lease seismic surveys conducted or contracted by the lessee, are considered lease-related activities. Restrictions on geophysical exploration permits, whether lease-related or not, will depend on the size, scope, duration, and intensity of the proposed project and on the reasonably foreseeable effects on important species, specifically marine mammals.

Studies indicate that some geophysical activities may have an impact on the behavior of bowhead whales. Measures may be imposed on geophysical exploration permits in the vicinity of bowhead whale migratory routes during spring or fall migrations. See the community involvement and seasonal drilling mitigation measures. The extent of effects on marine mammals varies depending on the type of survey and gear used.

Copies of the non-proprietary portions of all Geophysical Exploration Permit Applications will be made available to the NSB, AEWC, and potentially affected subsistence communities for comment.

5. Bird, Fish, and Marine Mammal Protection:
 - a. Lessees shall comply with the Recommended Protection Measures for Spectacled and Steller's Eiders developed by the USF&WS to ensure adequate protection of spectacled eiders during the nesting and brood rearing periods.
 - b. Peregrine falcon nesting sites may occur in the sale area. Lessees are advised that disturbing a peregrine falcon nest violates federal law. Lessees are required to comply with the federal resource recovery plan for the arctic peregrine falcon.
 - c. Lessees are advised that they must comply with the provisions of the Marine Mammal Protection Act of 1972 as amended.
6. Aircraft Restrictions:

To protect species that are sensitive to noise or movement, horizontal and vertical buffers will be required, consistent with aircraft, vehicle and vessel operations regulated by NSB Code §19.70.050(I)(1) which codifies NSBCMP policy 2.4.4.(a). Lessees are encouraged to apply the following provisions governing aircraft operations in and near the proposed sale area:

 - a. From June 1 to August 31, aircraft overflights must avoid identified brant, white-fronted goose, tundra swan, king eider, common eider, and yellow-billed loon nesting and brood rearing habitat, and from August 15 to September 15, the fall staging areas for geese, tundra swans, and shorebirds, by an altitude of 1,500 feet, or a lateral distance of one mile.
 - b. To the extent feasible and prudent, all aircraft should maintain an altitude of greater than 1,500 feet or a lateral distance of one mile, excluding takeoffs and landings, from caribou and muskoxen concentrations. A concentration means numbers of animals in excess of the general density of those animals found in the area.
 - c. Human safety will take precedence over flight restrictions.
7. Oil and Hazardous Substance Pollution Control:

Pursuant to regulations 18 AAC 75 administered by ADEC, lessees are required to have an approved oil discharge prevention and contingency plan (C-Plan) prior to commencing operations. The plan must include a response action plan to describe how a spill response would occur, a prevention plan to describe the spill prevention measures taken at the facility, and supplemental information to provide background and verification information.
8.
 - a. To conform with ADEC requirements, impermeable lining and diking, or equivalent measures such as double-walled tanks, will be required for onshore oil storage facilities (with a total above ground storage capacity greater than 1,320 gallons, provided no single tank capacity exceeds 660 gal) and for sewage ponds. Additional site-specific measures may be required as determined by ADNR, with the concurrence of ADEC and will be addressed in the existing review of project permits or C-Plans.
 - b. Buffer zones of not less than 500 feet will be required to separate onshore oil storage facilities (with a capacity greater than 660 gallons) and sewage ponds from freshwater supplies, streams, and lakes and key wetlands unless the Director after consultation with ADEC, determines that such a requirement is not feasible or prudent. Reserve pits, if used must be impermeable and otherwise fully contained through diking or other means.
9. Sensitive Areas:

Lessees are advised that certain areas are especially valuable for their concentrations of marine birds, marine mammals, fishes, or other biological resources; cultural resources; and for their importance to

subsistence harvest activities. The following areas must be considered when developing plans of operation. Identified areas and time periods of special biological and cultural sensitivity include:

- a. the Boulder Patch in Stefansson Sound, year round;
 - b. the Canning River Delta, January-December;
 - c. the Colville River Delta, January-December;
 - d. the Cross, Pole, Egg, and Thetis Islands, June-December;
 - e. the Flaxman Island waterfowl use and polar bear denning areas, including the Leffingwell Cabin national historic site located on Flaxman Island;
 - f. the Jones Island Group (Pingok, Spy, and Leavitt Islands) and Pole Island are known polar bear denning sites, November-April; and
 - g. the Sagavanirktok River delta, January-December.
 - h. Howe Island supports a snow goose nesting colony, May-August.
10. Lessees are encouraged in planning and design activities for related onshore operations to consider the recommendations for oil field design and operations contained in the final report to the Alaska Caribou Steering Committee: Cronin, M. et al, 1994. *Mitigation of the Effects of Oil Field Development and Transportation Corridors on Caribou*. LGL Alaska Research Associates, Inc., July.
11. Access:
No lease facilities or operations may be located so as to block access to, or along, navigable and public waters as defined by AS 38.05.965(13) and (17).
12. Subsistence whaling:
Subsistence whaling activities occur generally during the following periods:
- a. August to October: Kaktovik whalers use the area circumscribed from Anderson Point in Camden Bay to a point 30 km north of Barter Island to Humphrey Point east of Barter Island. Nuiqsut whalers use an area extending from a line northward of the Nechelik Channel of the Colville River to Flaxman Island, seaward of the Barrier Islands.
 - b. September to October: Barrow hunters use the area circumscribed by a western boundary extending approximately 15 km off Cooper Island, with an eastern boundary on the east side of Dease Inlet. Occasional use may extend eastward as far as Cape Halkett.
13. Howe Island:
ADF&G reports that Howe Island may be one of only two known snow goose nesting colonies in the United States. Lessees are advised that surface entry onto Howe Island will likely be prohibited.
14. Conflict Avoidance Agreements:
Lessees are advised that the NSB may, under its authorities, require the lessee to enter into a Conflict Avoidance Agreement with the AEWG prior to applying for a NSB rezoning or development permit for the siting of permanent facilities in state waters. If the Director permits permanent facility siting in state waters within three miles of Cross Island, subject to the subsistence harvest protection and whale harvest protection mitigation measures, the NSB has advised the state they will require a Conflict Avoidance Agreement.